Multi*FRAD* II™

Router/Two-Port Frame Relay Access Device

Model FR2201

Quick Start Guide

Multi**Tech**®
Systems

Quick Start Guide

82092700 Revision A

MultiFRAD Model FR2201 (MultiFRAD II)

This publication may not be reproduced, in whole or in part, without prior expressed written permission from Multi-Tech Systems, Inc. All rights reserved.

Multi-Tech Systems, Inc. makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Furthermore, Multi-Tech Systems, Inc. reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of Multi-Tech Systems, Inc. to notify any person or organization of such revisions or changes.

Record of Revisions

Revision	Description
A (10/2/98)	Manual released. All pages at revision A.

Patents

This Product is covered by one or more of the following U.S. Patent Numbers: *5.301.274; 5.309.562*; *5.355.365; 5.355.653; 5.452.289; 5.453.986*. Other Patents Pending.

TRADEMARK

Trademark of Multi-Tech Systems, Inc. are MultiFRAD, MultiFRAD II, and the Multi-Tech logo.

Windows is a registered trademark of Microsoft.

Multi-Tech Systems, Inc.
2205 Woodale Drive
Mounds View, Minnesota 55112
(612) 785-3500 or (800) 328-9717
Fax 612-785-9874
Tech Support (800) 972-2439

Contents

Introduction

Welcome to Multi-Tech's new MultiFRAD II™, model FR2201, a Router/ Two-Port Frame Relay Access Device (FRAD) that encapsulates non-packetized data streams from serial and LAN devices into frame relay frames and frames that data with header and trailer information prior to sending it to a frame relay network. The MultiFRAD enables non-frame relay devices to connect to a common carrier frame relay network service or private frame relay network. The FR2201 is designed with channels to two non-frame relay devices, an Ethernet LAN connection for IP or IPX routing or bridging, and a trunk interface to a Frame Relay network. On the receiving end of the communication, the MultiFRAD strips away the frame relay control information so the target device receives the data packaged in its original form.

Since frame relay networks use shared resources, they typically are more reliable and less expensive per month than equivalent leased lines. Depending on the location and distances between points, simple point-to-point networks can cost less per month than leased lines. The cost savings are even greater when multiple leased lines are replaced with frame relay.

The FR2201 has two data ports for Data Terminal Equipment (DTE) devices that are either asynchronous or HDLC synchronous. A single Ethernet LAN connection is provided for IP or IPX routing and Media Access Control (MAC) layer bridging for all other protocols on either a 10Base-T or AUI port connection. The trunk connection provides the link to a synchronous Data Communications Equipment (DCE) device for access to the Frame Relay network.
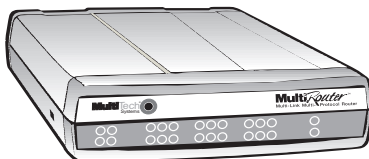
Figure 1. MultiFRAD II

Related Documentation

This MultiFRAD Quick Start Guide is intended to be used by qualified systems administrators and network managers. This quick start guide provides the necessary information for a qualified person to unpack, cable, install software, and configure the unit for proper operation.

A detailed MultiFRAD User Guide is also provided with your unit. The user guide provides in-depth information on the features and functionality of Multi-Tech's MultiFRAD. The User Guide is provided in disk form and is also available from our Web site.

The disk version is produced using Adobe Acrobat. To view or print your copy of a user guide, load Adobe Acrobat Reader on your system. Adobe Acrobat Reader can be downloaded from Adobe's Web site at:

http://www.adobe.com/prodindex/acrobat/readstep.html

Launch the Reader and open the **.pdf** file that is on the disk.

Viewing and printing a user guide from the Web also requires that you have the Adobe Acrobat Reader loaded on your system. The MultiFRAD II User Guide is also available on Multi-Tech's Web site at:

http://www.multitech.com

From the MTS home page, click **Suppor**t | **Manuals** | **Multi-FRAD** and choose **MultiFRAD II** to download the **.pdf** file.

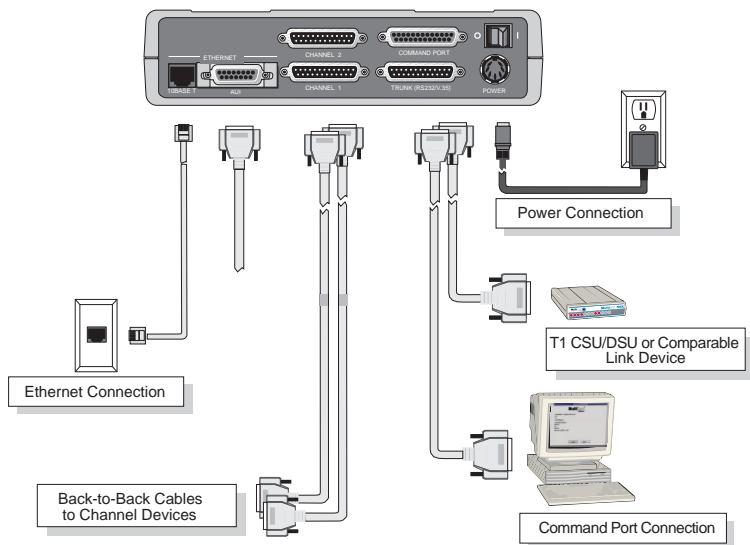## Unpacking your MultiFRAD II

Remove all items from the box.
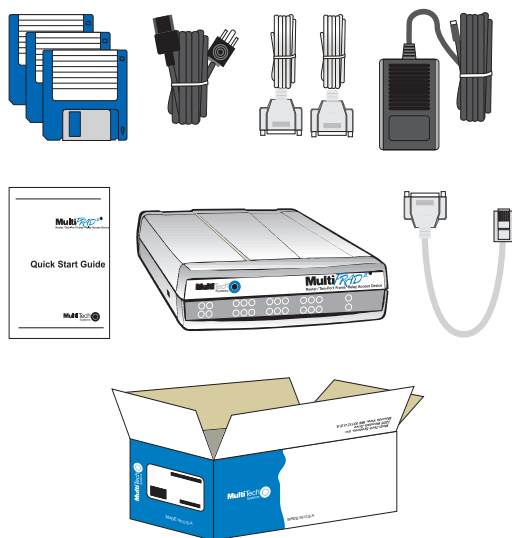
Figure 2. Unpacking

Cabling your MultiFRAD II

Cabling your MultiFRAD involves making the proper Power, Command Port, Ethernet, and Channel connections. Figure 3 shows the back panel connectors and the associated cable connections. The MultiFRAD II supports up to 2 data channels. Table 1 details the procedures for connecting the cables to your MultiFRAD.

Figure 3. Cable Connections

Table 1. Cabling Procedure

Step	Procedure
1	Connect one end of a DB25 <u>back-to-back cable</u> to each of the data channel connectors on the back of your MultiFRAD (labeled CHANNEL 1-2). See Figure 3. Connect the other end of each cable to a channel device.
	NOTE: Both channels support the RS232/V.35 protocols, and either asynchronous or HDLC synchronous RS232 data equipment such as multiplexers.
2	Connect one end of an DB25 (female) cable to the Trunk connector (Figure 3). Connect the other cable end to your T1 CSU/DSU or compatible link device.
3	To make the network connection, connect an RJ45 (UTP) cable to the 10 BASE-T Ethernet connector or the male connector for a 10Base5 cable to the AUI Ethernet connector (shown in Figure 3). Connect the other end of the cable to your LAN.
4	Connect the MultiFRAD to your PC with a standard RS232 cable. Plug the male end of the cable into the Command Port (Figure 3) and the other end into the PC's serial port.
5	Connect one end of the power supply to a live AC outlet, then connect the other end to the MultiFRAD as shown in Figure 3. The Power connector is a 7-pin circular DIN connector.
6	Apply power to the MultiFRAD by setting the Power switch (Figure 3) to the "1" (on) position.

At this time your MultiFRAD is completely cabled. Proceed to the next section to install your software.

Installing your Software

The following procedure does not provide every screen or option used in the process of installing the MultiFRAD software. The assumption is that a technical person with a thorough knowledge of Windows and the software loading process is doing the installation. Additional information on the MultiFRAD software is provided in the User Guide supplied with your MultiFRAD II.

1. Run Windows on the PC that is connected to the Command Port.

2. Insert the MultiFRAD II disk 1 into the disk drive on the PC that is connected to the Command Port.

3. **Win3.1 users** - access Run by clicking the File menu in Program Manager and then click Run. In the Run dialog box, type **a:\setup** or **b:\setup** (depending on the letter of your disk drive) in the Command Line field and then click **OK**.

    Win95 users - click the Start box and then click Run. In the Run dialog box click the down arrow and choose **a:\setup.exe** or **b:\setup.exe** (depending on the letter of your disk drive) in the Command Line field and then click **OK**.
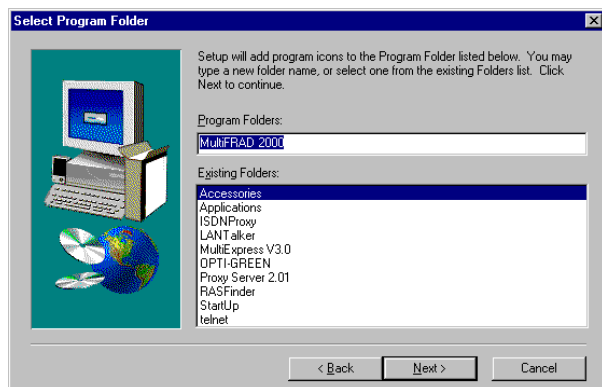

4. Click **Next>** to continue, then follow the on-screen instructions to install your MultiFRAD software.

The **Choose Destination Location** screen is displayed.
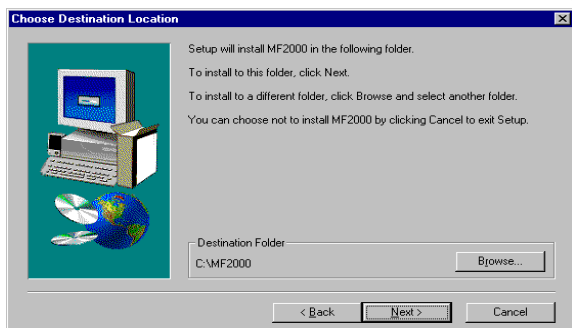
5. Click **Browse** to select a different folder for your MultiFRAD software, or accept the default (**MF2000**) by clicking **Next>** (or pressing the Enter key).

    The **Select Program Folder** screen is displayed.

6. Click **Next>** to continue. After all the program files from both disks are loaded, the **Setup** dialog box is displayed, enabling you to designate the COM port of the PC that is connected to your MultiFRAD. On the **Select Port** field, click the down arrow and choose the COM port of your PC (COM1 -- COM4) that is connected to your MultiFRAD.
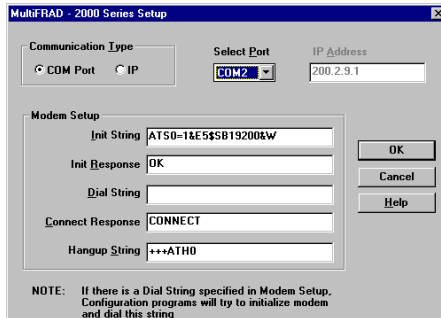
7. Click **OK** to continue. The **Setup Complete** screen is
   displayed.
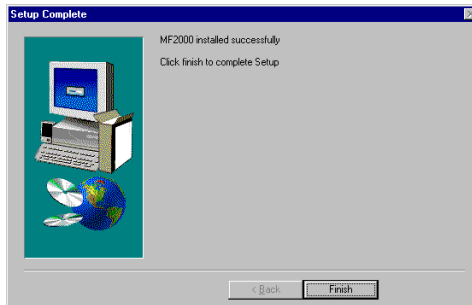
8. Click **Finish** to continue configuring your MultiFRAD.
   The **Do you want to download default setup?** dialog
   box is displayed.

9. Click **Yes** to continue. A series of five Setup and
   Configuration dialog boxes will now be displayed. The On-
   Line Help system provides detailed explanations of each
   dialog box and option. To access Help, click the **?** button
   on the dialog box for which you need additional
   information.
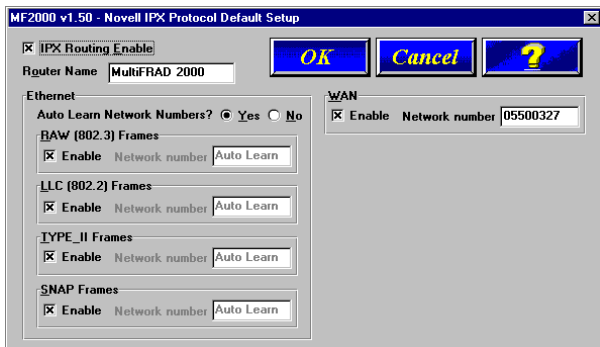
If your network protocol is **IPX,** continue with the following steps. If your network protocol is **IP**, click the **IPX Routing Enable** check box to clear it and disable IPX, then click **OK** and proceed to step 14.

10. **Router Name:** You can either use the default Router Name (MultiFRAD 2000) or assign a new Router Name in this field. The Router Name must be a printable ASCII string of a maximum of 47 characters. The MultiFRAD uses this name to advertise its service throughout the IPX internetwork.

11. **Ethernet:** You can enable Auto Learn Network Numbers by leaving the default **Yes** or you can click on **No** (each Network number field will then become active) and manually assign the network numbers here.

    If no file server is connected to the Ethernet segment, then this field should be **No** (recommended).

    If you enable Auto Learn (**Yes**), the MultiFRAD will learn the IPX network numbers from the file server.

    If you select **No** for Auto Learn, record the network numbers assigned by the network file server for each of the four frame types (Raw (802.3), LLC (802.2), EthernetII (Type II), SNAP) in the space provided below.

RAW (802.3) Frames Network Number _____
LCC (802.2) Frames Network Number _____
TYPE_II Frames Network Number _____
SNAP Frames Network Number _____
WAN Network Number _____

When you manually assign network numbers, you must make sure they match the network numbers assigned to your local file server (if any).

12. **WAN**: Enter the WAN network number for the Frame Relay WAN Port by clicking the Network Number box, backspacing through the default number, and entering your new WAN Number. Make sure the WAN network number is the same as the MultiFRAD on the other end of the link.

The WAN network number has to be assigned by the Network Administrator and must be unique throughout the entire internetwork.

Note: The WAN port does not have the capability of learning the network number, unlike the LAN port (i.e., the WAN port does not have a file server).

13. Click **OK** when you are satisfied with your selections.

14. If you clicked **OK** from the IPX Protocol Default Setup dialog box (step 9), the IP Protocol Default Setup dialog box is displayed.
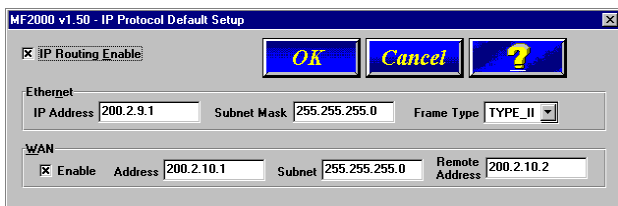
15. To change the IP parameters, proceed to the next step. Clicking **OK** advances to the WAN Ports Default Setup dialog box. The WAN Ports Default Setup starts at step 21.

16. The default Ethernet IP Address has to be changed to your unique LAN address. Enter an acceptable, unique **IP address** in the Ethernet port IP Adress field.

17. Change the default **Subnet Mask** and **Frame Type** to the values you have assigned to your LAN port.

18. The default WAN Address has to be changed to your unique WAN address. Assign an acceptable unique **WAN Address** to the WAN port.

19. Change the default **Subnet Mask** and **Remote Address** for WAN to the values you have assigned to your WAN.

20. Click **OK** when you are satisfied with your selections.

21. The **WAN Ports Default Setup** dialog box is displayed. The WAN Port is enabled in this dialog box. Frame Relay is also enabled. If your WAN port is going to be used in Point-to-point protocol, click **Enable PPP**. When PPP is enabled, the Modem Command Setup field becomes active and either Asynchronous or Direct Connect needs to be checked (enabled).
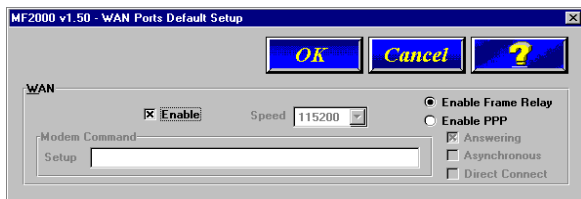

The WAN port can be further configured (after the software installation is completed) by clicking the MultiFRAD Configuration icon and then clicking the WAN button.

22. Click **OK** on the WAN Ports Default Setup dialog box.

23. The **Data Port Configuration** dialog box enables you to individually configure the two data channels (Port 1 and Port 2).

    If you are connecting to a synchronous device, ensure that

the Clocking type and Speed (for Internal clock only) are correct. Also, check that the Encoding Scheme, Between Frames, and InterFrame Timer settings are correct for your channel device. Refer to user documentation for the parameters of the channel device.
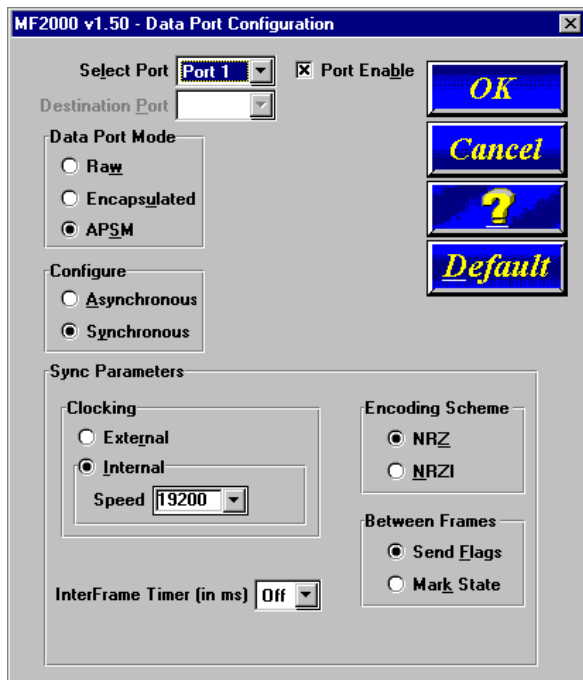

If you are connecting to an Asynchronous data device, select **Asynchronous**, then select the maximum **Speed** in the drop-down list. Refer to the user documentation for the parameters of the data device.

24. Click **OK** when you are satisfied with the configurations for both data ports.

25. If you enabled PPP in the WAN Ports Default Setup dialog box, proceed to step 37.

If you enabled Frame Relay in the WAN Ports Default Setup dialog box, the Frame Relay DLCI Default Setup dialog box is displayed with all the groups inactive.

When your MultiFRAD is connected to an active frame relay network service, it can detect DLCIs and the frame relay management type. However, at this point your MultiFRAD is not yet communicating with the frame relay network. Continue with the next step iff you know your DLCIs and want to add them manually. Otherwise, if you want them added automatically after your MultiFRAD is communicating with the frame relay network, proceed to step 37 to finish installing your software.
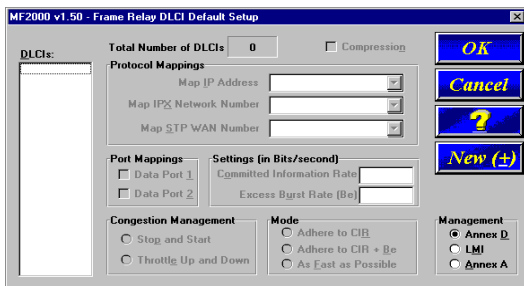

26. Click **New (+/-)** and the Frame Relay New DLCI dialog box is displayed with the **Enter DLCI Number** field active. Enter a DLCI number that was provided by your service provider at subscription time.
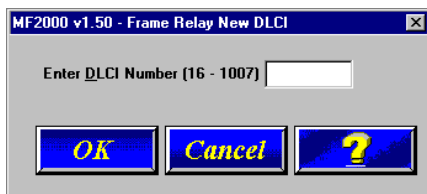
27. Click **OK**. The Frame Relay DLCI Default Setup dialog box is displayed with all the groups active and your DLCI displayed in the DLCIs field.

You can map a protocol stack and/or data port to a DLCI.
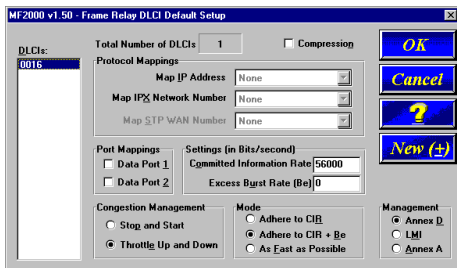
28. To map this DLCI to a protocol stack, click the down arrow for each protocol that your LAN uses. Select a logical IP WAN address or logical IPX network number from each list.

29. To map this DLCI to a data port, in the **Port Mappings** group click the Port number(s) you want to associate with this DLCI.

30. Ensure that **Throttle Up and Down** is selected in the **Congestion Management** group.

31. Ensure that **Adhere to CIR + Be** is selected in the **Mode** group. Multi-Tech recommends using this setting initially.

32. Click the **Committed Information Rate** text box in the **Settings (in Bits/second)** group and enter the CIR value your service provider supplied for this DLCI.

33. Click the **Excess Burst Rate (Be)** text box in the **Settings (in Bits/second)** group and enter the Be value your service provider supplied for this DLCI.

34. The **Compression** option may be useful at low link speeds; however, do not use this feature with a high speed link.

35. Click the **Management** type supported by the Frame Relay network. The network management type is supplied by your service provider at subscription time.

36. Repeat steps 26 through 35 for each new DLCI.

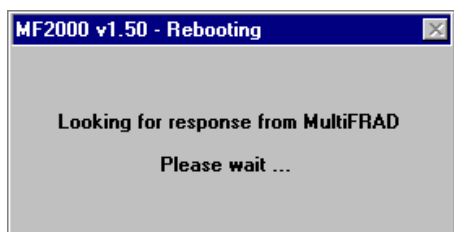37. The Checking MultiFRAD dialog box is displayed.
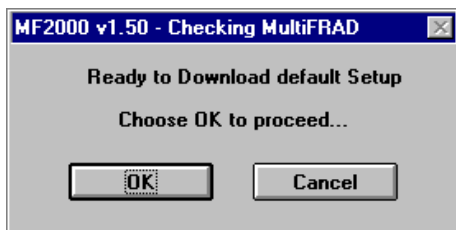
The Setup utility is "Ready to Download default setup Choose OK to proceed." Click **OK** to proceed.

38. Writing Setup dialog box is displayed as the setup configuration is written to the MultiFRAD.
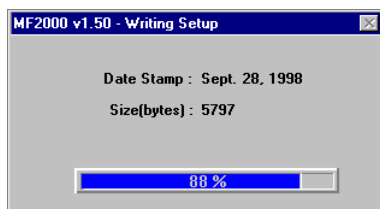
39. After the setup is written to the MultiFRAD, the unit reboots.

40. Check that the **Fail** LED on the MultiFRAD is Off after the download is complete and the MultiFRAD is rebooted.

41. **Win3.1 users** - you are returned to your Program Manager where the MultiFRAD Program Group and

Program Item (Windows icons) have been created.

Win95 users - you are returned to your MultiFRAD 2000folder which will be visible on your desktop.

Your MultiFRAD is operational at this time.

42. If you need to further configure your MultiFRAD once the software is installed, proceed with the following:

Win3.1 users - from the Program Manager, click the **MultiFRAD Configuration** icon in the MultiFRAD 2000 Program Group. The main Setup dialog box is displayed.

Win95 users - from your desktop, click Programs, MultiFRAD 2000, then **MultiFRAD Configuration**. The main Setup dialog box is displayed.
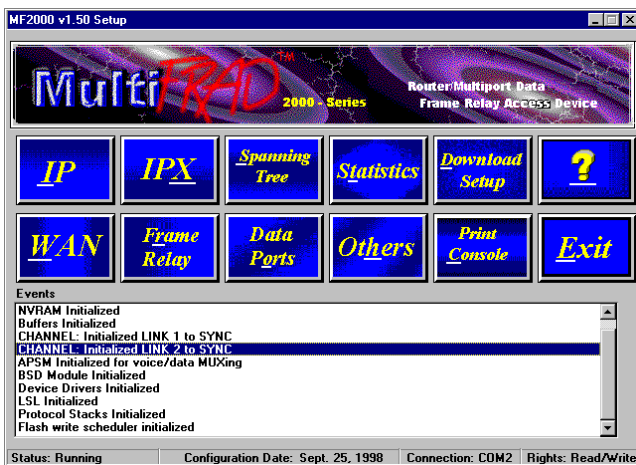

43. On the main Setup dialog box, click **Frame Relay**.

44. A Frame Relay dialog box stating "MultiFRAD has detected and added following DLCIs." is displayed.
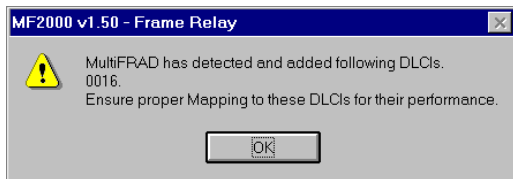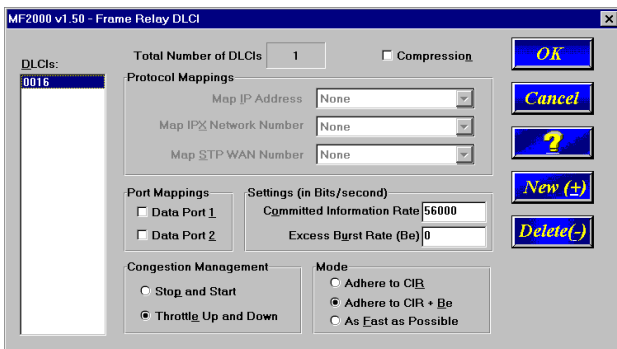
Click **OK**.

45. A second Frame Relay dialog box is displayed, stating "MultiFRAD has detected Management Type to be Annex D. Hence it has set Management type to Annex D from LMI". The Management Types are Annex A, Annex D, or LMI. Any one of them could appear in this dialog box.
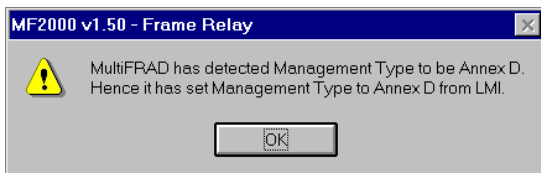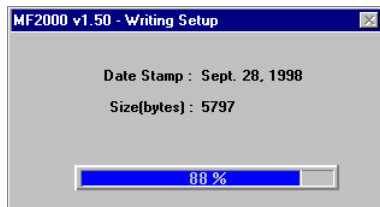

Click OK and the Frame Relay DLCI dialog box is displayed.

46. Click the DLCI you want to map. The Protocol Mappings, Port Mappings, and all the other groups become active.

47. To map this DLCI to a protocol stack, click a protocol stack's down arrow for each protocol that your LAN is

using. each protocols drop-down list displays "None" and your logical IP WAN addresses and/or logical IPX network numbers.

48. To map this DLCI to a data port, in the **Port Mappings** group click the Port number(s) you want to associate with this DLCI.

49. Ensure that **Throttle Up and Down** is selected in the **Congestion Management** group.

50. Ensure that **Adhere to CIR + Be** is selected in the **Mode** group. Multi-Tech recommends using this setting initially.

51. Click the **Committed Information Rate** text box in the **Settings (in Bits/second)** group and enter the CIR value your service provider supplied for this DLCI.

52. Click the **Excess Burst Rate (Be)** text box in the **Settings (in Bits/second)** group and enter the Be value your service provider supplied for this DLCI.

53. The **Compression** option may be useful at low link speeds; however, do not use this feature with a high speed link.

54. Repeat steps 46 through 53 for each new DLCI.

55. Click **OK** when you are satisfied with all your selections.

56. The Writing Setup dialog box is displayed as the setup configuration is written to the MultiFRAD.

57. After the setup is written to the MultiFRAD, the unit reboots.

MF2000 v1.50 - Rebooting

Looking for response from MultiFRAD

Please wait ...
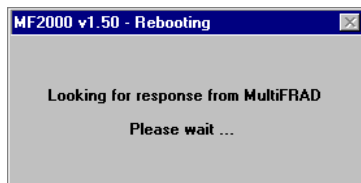
58. Check that the **Fail**LED on the MultiFRAD is Off after the download is complete and the MultiFRAD is rebooted.

59. **Win3.1 users** - you are returned to your Program Manager where the MultiFRAD 2000 Program Group and Program Item (Windows icons) have been created.

    Win95 users - you are returned to your MultiFRAD 2000 folder which will be visible on your desktop.

    Your MultiFRAD is operational at this time.

Limited Warranty

Multi-Tech Systems, Inc. ("MTS") warrants that its products will be free from defects in material or workmanship for a period of two years from the date of purchase, or if proof of purchase is not provided, two years from date of shipment. MTS MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. This warranty does not apply to any products which have been damaged by lightning storms, water, or power surges or which have been neglected, altered, abused, used for a purpose other than the one for which they were manufactured, repaired by the customer or any party without MTS's written authorization, or used in any manner inconsistent with MTS's instructions.

MTS's entire obligation under this warranty shall be limited (at MTS's option) to repair or replacement of any products which prove to be defective within the warranty period, or, at MTS's option, issuance of a refund of the purchase price. Defective products must be returned by Customer to MTS's factory transportation prepaid.

MTS WILL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES AND UNDER NO CIRCUMSTANCES WILL ITS LIABILITY EXCEED THE PURCHASE PRICE FOR DEFECTIVE PRODUCTS.

Service

Multi-Tech has an excellent staff of technical support personnel available to help you get the most out of your Multi-Tech product. Refer to your MultiFRAD II User Guide for Warranty and Service information.

NOTE: This equipment has been tested and found to comply with the limits for a **Class A** digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.